

REMARKS

Claims 1-31 were pending in the application. Claims 1, 11, 18, and 19 have been amended. Support for the amendments to these claims may be found on at least page 16, lines 11-15 of the specification. Accordingly, claims 1-31 remain pending subsequent entry of the present amendment.

Information Disclosure Statement

Applicant notes the examiner's objection regarding the information disclosure statement filed April 10, 2001. However, as the present application is a continuation-in-part of Application Serial No. 09/474,659, in which the information disclosure statement references were also submitted for consideration, it not believed necessary to resubmit the references (MPEP 609).

Drawings

Acceptance of Applicant's replacement drawings sheets is noted and appreciated.

Claim Rejections

In the present office action, claims 1-9, 12, 15, 18-24, and 28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,896,211 (hereinafter "Watanabe"), in view of U.S. Patent No. 5,140,453 (hereinafter "Tsushima"), and Jacobsen et al. ("The effect of crosstalk and phase noise in multichannel coherent optical ASK systems", hereinafter "Jacobsen"). In addition, claims 10-11 and 25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Watanabe in view of Tsushima and Jacobsen, and further in view of U.S. Patent No. 5,546,190 (hereinafter "Hill"). Applicant respectfully traverses these rejections and requests reconsideration in view of the following discussion.

Claims 1, 11, 18, and 19 recite features that are neither taught nor suggested by the cited art. For example, Claim 1 recites in part a system:

“... wherein a signal extractor of one of the at least two heterodyne receivers comprises two extraction paths and a combiner, each extraction path configured to process a different one of at least two sidebands within the electrical signal, wherein a first extraction path of the two extraction paths is configured to process only an upper sideband within the electrical signal and a second extraction path of the two extraction paths is configured to process only a lower sideband within the electrical signal.”

It is noted that each extraction path processes a different sideband within the electrical signal. Furthermore, one extraction path processes only an upper sideband and the other extraction path processes only a lower sideband. In contrast, Tsushima discloses splitting a signal into two intermediate signals, each of which contains two sidebands (Tsushima, Fig 3C, in which signals 5a and 5b each include a reference tone and two sidebands). Tsushima does not disclose or suggest that within each intermediate signal, individual sidebands are selected, filtered, removed, or otherwise isolated from the other sidebands. Further, Tsushima nowhere discloses or suggests processing only an upper sideband within a first extraction path and only a lower sideband within a second extraction path. Accordingly, Applicant finds no teaching or suggestion in Tsushima of two extraction paths and a combiner, each extraction path configured to process a different one of at least two sidebands within the electrical signal, wherein a first extraction path of the two extraction paths is configured to process only an upper sideband within the electrical signal and a second extraction path of the two extraction paths is configured to process only a lower sideband within the electrical signal. Nor are these features found in any combination of Tsushima with Watanabe and/or Jacobsen. Therefore, Applicant submits that claim 1 is patentably distinguishable from the cited art for at least the above reasons.

As independent claim 18 recites limitations similar to those of claim 1, claim 18 is believed patentably distinguishable from the cited art for similar reasons. Likewise, each

of dependent claims 2-17 and 19-31 is believed patentably distinguishable from the cited art for at least the above reasons as well.

In addition to the above, Applicant submits the dependent claims recite additional features neither disclosed nor suggested by the cited art. For example, claim 11 recites:

“The optical communications system of claim 1 wherein the upper sideband and the lower sideband are sidebands of a common pilot tone.”

It is noted that the upper sideband, which is processed by the first extraction path, and the lower sideband, which is processed by the second extraction path, have a common pilot tone. In contrast, Tsushima discloses:

“In FIG. 1, reference symbols 1a and 1b designate reference lightwaves which are different in frequency from each other and have polarization planes substantially perpendicular to each other, 2 a signal lightwave, 3 a combined lightwave obtained by combining the reference lightwave 1a and 1b with the signal lightwave 2, 4 a detection signal which is obtained by carrying out heterodyne detection for the combined lightwave 3, 5a and 5b intermediate-frequency signals which are extracted from the detection signal 4 and are different in carrier frequency from each other, 6a and 6b baseband signals obtained from the intermediate-frequency signals 5a and 5b, 7 an output signal obtained by adding the baseband signals 6a and 6b, 8 an optical fiber for transmitting the signal lightwave 2, 9 a local oscillator for emitting the reference lightwaves 1a and 1b, and 10a and 10b light sources included in the local oscillator 9.” (Tsushima, col. 4, lines 50-67, emphasis added).

“Further, in FIG. 1, reference numeral 11 designates an optical combiner for combining the reference lightwaves 1a and 1b and the signal lightwave 2 to obtain the combined lightwave 3, 12 an optical-coupler made up of single-mode optical fibers or a directional coupler for forming the optical combiner 11, 13 a heterodyne detector, 14 an optical detector formed of a PIN photodiode or avalanche photodiode for carrying out heterodyne detection for the combined lightwave 3 (it is to be noted that reference symbol V.sub.B denotes a voltage applied to the optical detector 14), 15 a demodulator for demodulating the detection signal 4 to obtain an output signal 7, 16 a signal divider for dividing the detection signal 4 into two parts, 17a a bandpass filter for transmitting only the intermediate-frequency signal 5a which is obtained from the signal lightwave 2 and the reference lightwave 1a, 17b a band pass filter for transmitting

only the intermediate-frequency signal 5b which is obtained from the signal lightwave 2 and the reference lightwave 1b, ..." (Tsushima, col. 5, lines 6-26, emphasis added).

It is noted that signal divider 16 divides the detection signal 4 into two parts, the first of which is filtered to produce intermediate-frequency signal 5a, having a first carrier frequency, and the second of which is filtered to produce intermediate-frequency signal 5b, having a second carrier frequency. Therefore, the two parts do not have the same carrier. Applicant finds no teaching or suggestion in Tsushima of two signals having a common pilot tone as recited. Nor are these features found in any combination of Tsushima with Watanabe and/or Jacobsen and/or Hill. Accordingly, Applicant submits that claim 11, is patentably distinguishable from the cited art for at least these additional reasons as well. As claim 19, recites limitations similar to those of claim 11, claim 19 is believed patentably distinguishable from the cited art for similar reasons.

In the present office action, claims 13-14, 16-17, 26-27, and 29-30 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Watanabe in view of Tsushima and Jacobsen, and further in view of Wong et al. (U.S. Patent No. 6,058,227). Also, claim 31 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Watanabe in view of Tsushima and Jacobsen and further in view of Ellis et al. ("Feedback control of a linearised Mach-Zehnder modulator for SCM applications", and Sargis et al. (U.S. Patent No. 5,596,436). In view of the above remarks, Applicant submits these claims are patentably distinguished from the cited art as well.

CONCLUSION

Applicant submits the application is in condition for allowance, and an early notice to that effect is requested.

If any fees are due, the Commissioner is authorized to charge said fees to Meyertons, Hood, Kivlin, Kowert, & Goetzel, P.C. Deposit Account No. 501505/5957-41701/RDR.

Respectfully submitted,



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